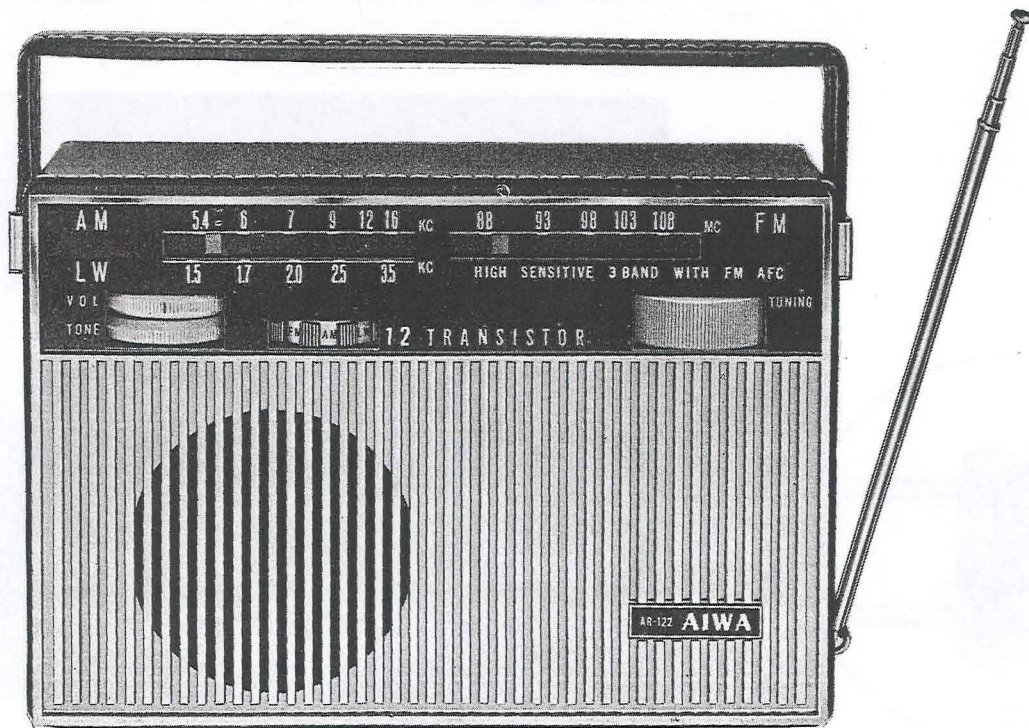


# AIWA

## 12 TRANSISTOR RADIO

### MODEL **AR-122**

## SERVICE MANUAL



\* AR-122 is available in three kinds: FM/AM/SW type operating on 117V (110V) and 220V power supply and FM/AM/LW on 220V.

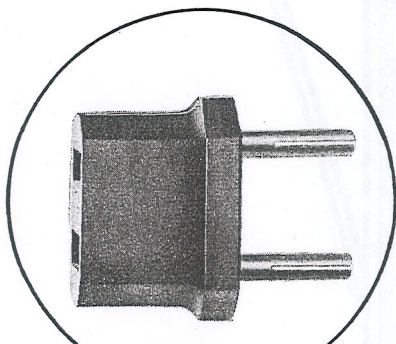
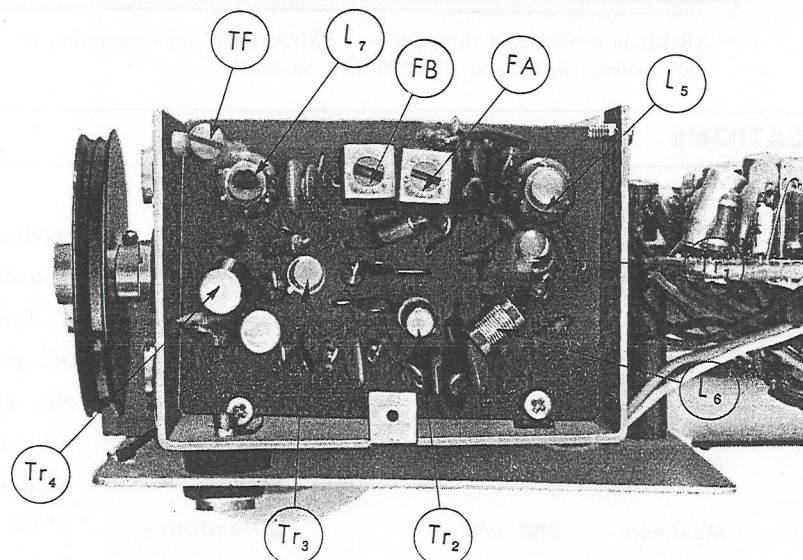
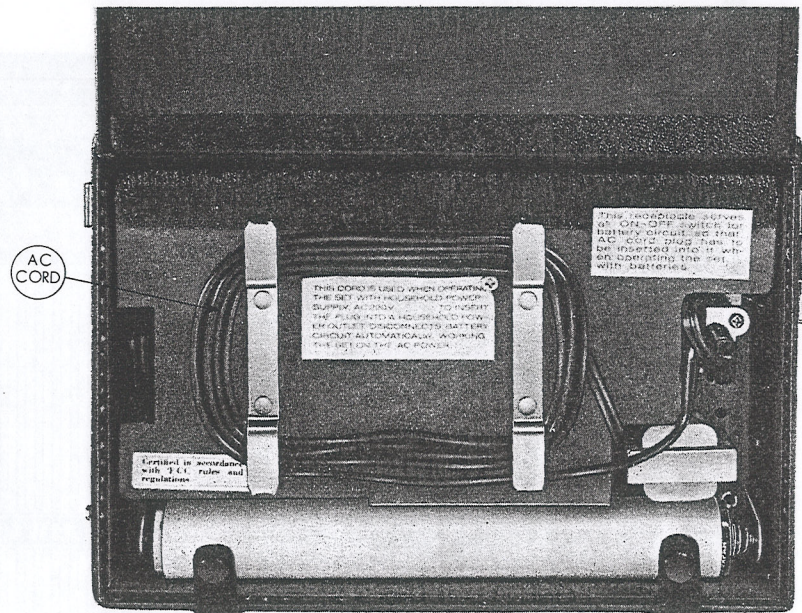
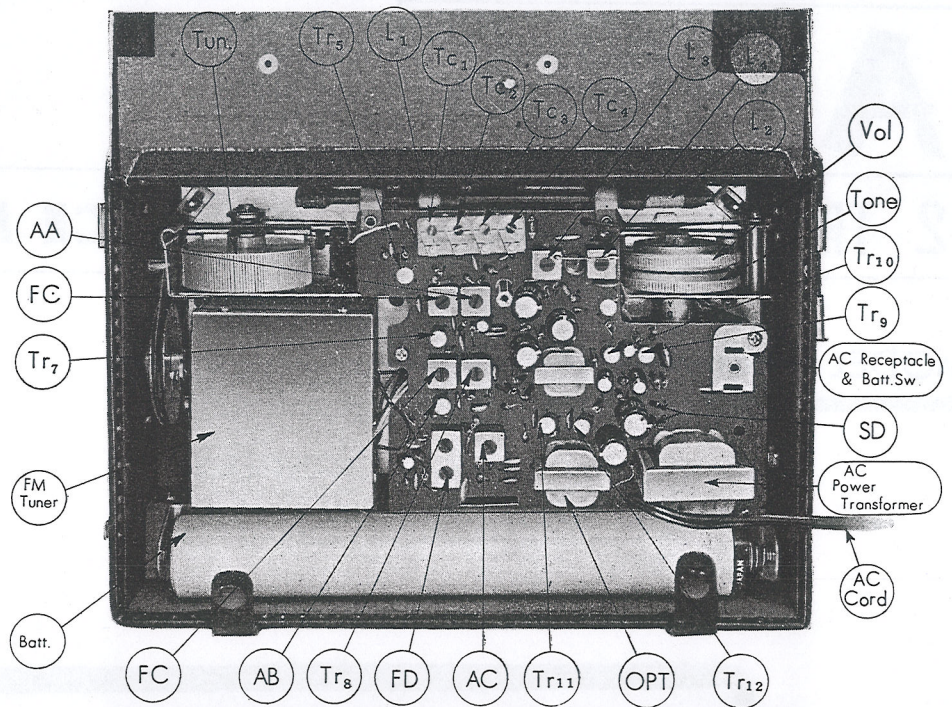
### SPECIFICATIONS

|                   |   |                |  |
|-------------------|---|----------------|--|
| Circuit :         | 12 transistors/5 diodes<br>2 rectifier/1 thermister                 | Antenna :      | Ferrite bar antenna AM, SW, (LW)<br>7-section rod antenna FM, SW         |
| Frequency range : | FM 88~ 108 Mc<br>AM 525~1650 Kc<br>SW 3.5~ 10 Mc<br>(LW 150~350 Kc) | Speaker :      | 3" Dia. 8Ω   |
| Output :          | Maximum 350 mW<br>Undistorted 250 mW                                | Power Supply : | DC 6 V Size "C" Eveready<br>No. 935 JIS UM-2 × 4 also<br>AC 117V or 220V |
|                   |   | Earphone :     | Magnetic earphone  |
|                   |   | Dimensions :   | 9" × 6¼" (7¾") × 3"  |
|                   |   | Weight :       | 5 lbs.   |

AIWA CO., LTD. TOKYO, JAPAN



# Transistors and Major Components Locations

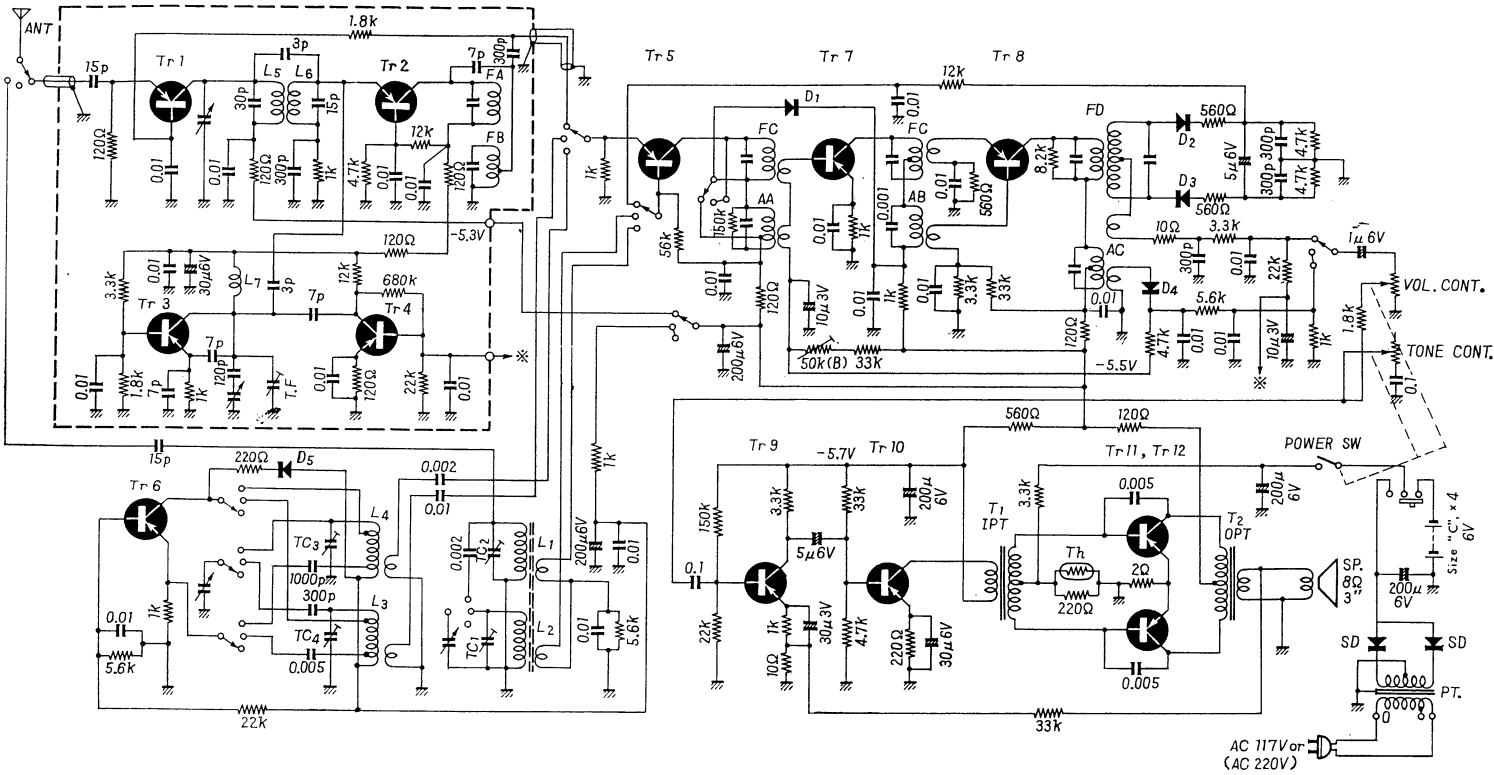


AC Cord for FM/AM/LW



Schematic Circuit Diagram

FM-AM-SW



FM-AM-LW

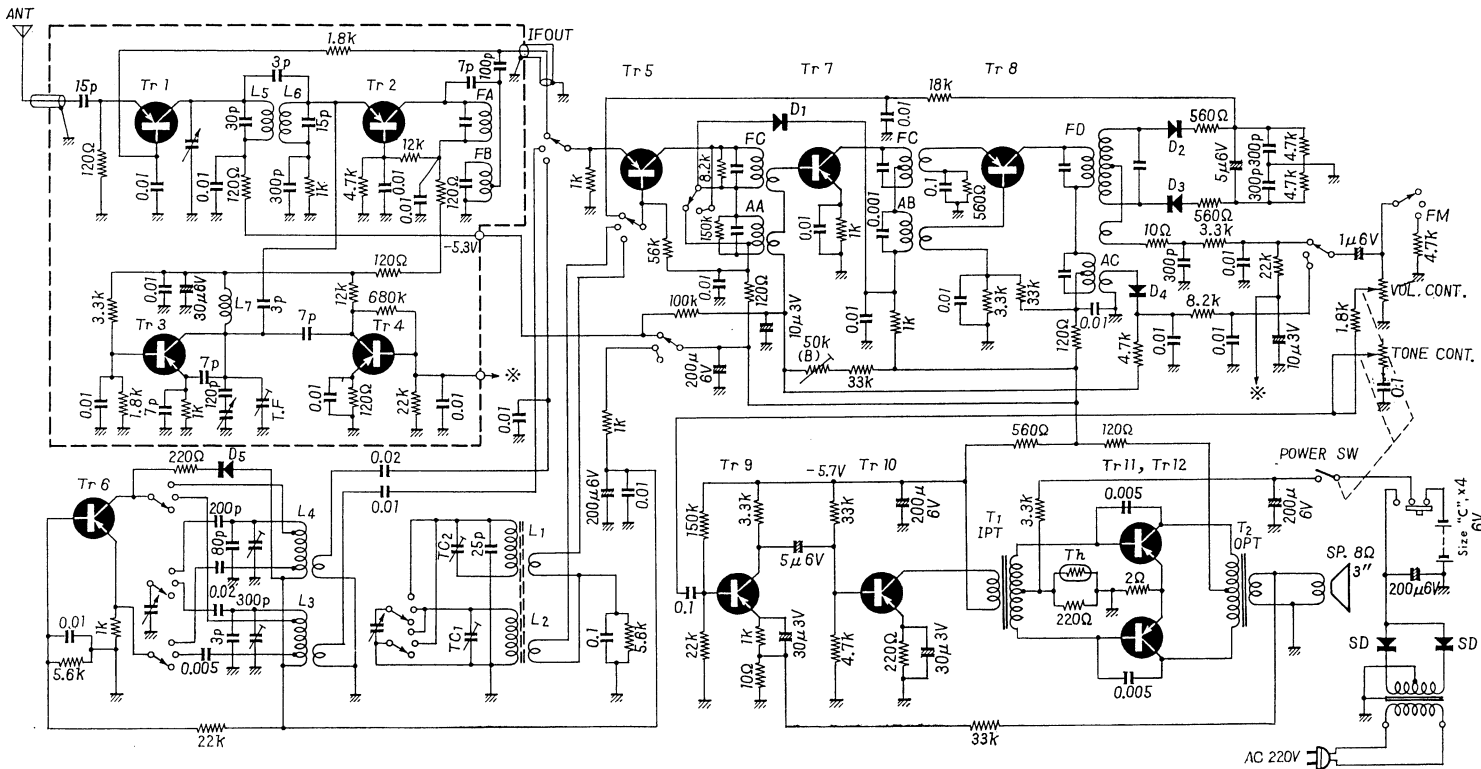


Fig.1

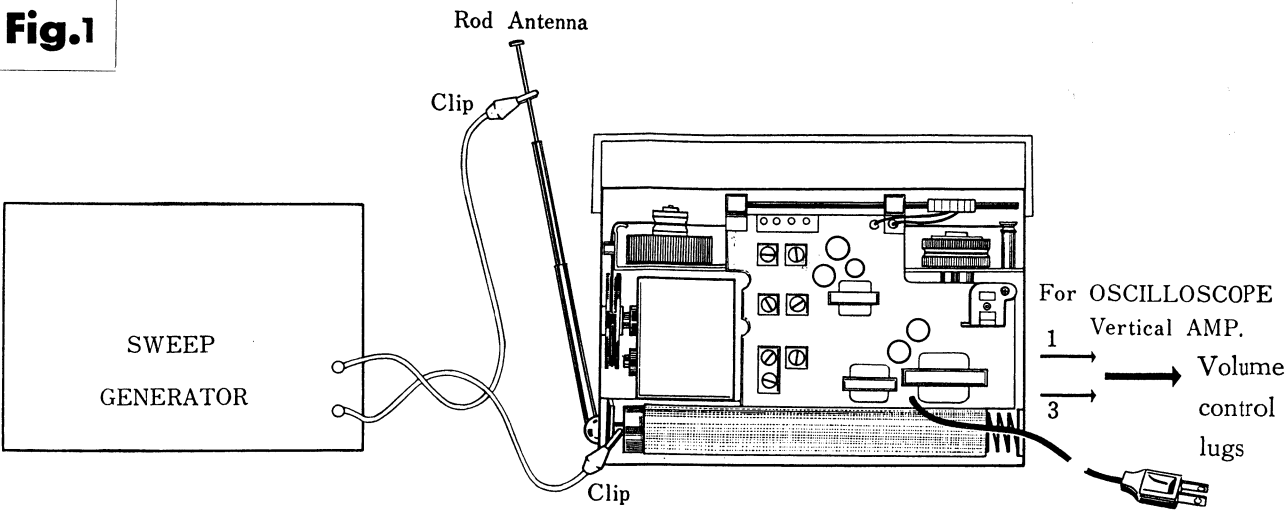
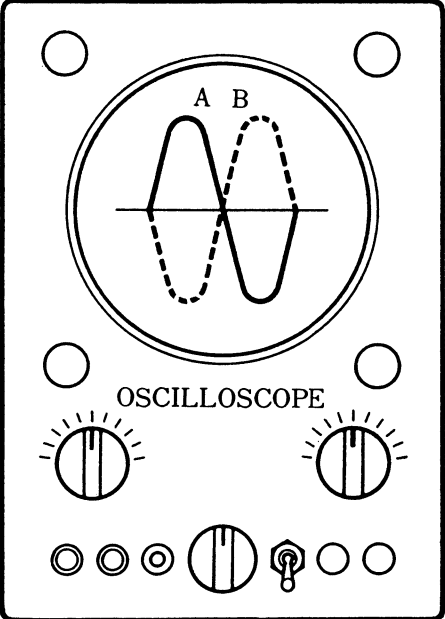


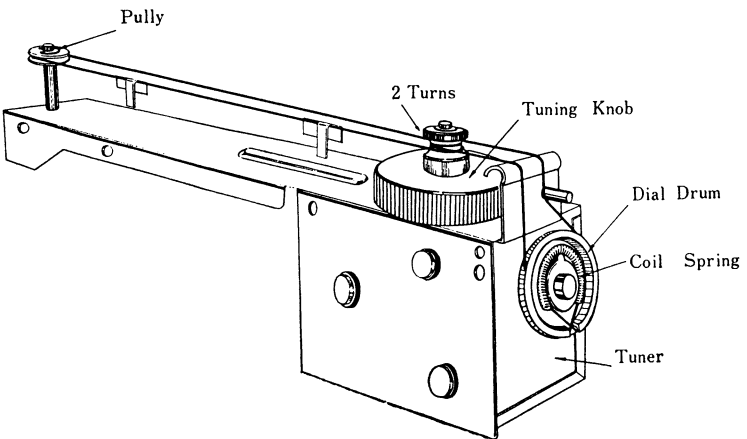
Fig.2

A or B  
"S" curve maximum and  
to be symmetry



↑ ↑ (FM DET. OUT)  
V. input  
From Volume control lugs  
No. 1 & 3 of the Radio

Tuning Drive Cord



ALIGNMENT INSTRUCTIONS (FM)

- \* Volume control should be at minimum.
- \* Oscilloscope should be connected across lug No. 1 & 3 of Volume control.

| Step | Sweep Generator Coupling | Band Switch Setting | Sweep Generator Frequency | Radio Dial Setting | Adjust for "S" curve max. (Fig. 2) |
|------|--------------------------|---------------------|---------------------------|--------------------|------------------------------------|
| 1    | Fig. 1                   | FM                  | 10.7 Mc                   | VC. Max.           | FA. FB. FC. FD                     |
| 2    | Fig. 1                   | FM                  | 86.5 Mc                   | VC. Max.           | L7                                 |
| 3    | Fig. 1                   | FM                  | 109 Mc                    | VC. Min.           | TF                                 |
| 4    | Repeat step 2 & 3        |                     |                           |                    |                                    |
| 5    | Fig. 1                   | FM                  | 100 Mc                    | 100 Mc             | L5 (FM-AM-LW) RADIO only           |

ALIGNMENT INSTRUCTIONS (AM)

- \* Volume control should be at maximum.
- \* Output meter should be connected across the voice coil of speaker.

| Step | Signal Generator Coupling | Band Switch Setting | Signal Generator Frequency | Radio Dial Setting | Adjust for Max. Output |
|------|---------------------------|---------------------|----------------------------|--------------------|------------------------|
| 1    | Loop                      | AM                  | 455 Kc                     | VC. Max.           | AA. AB. AC.            |
| 2    | Loop                      | AM                  | 515 Kc                     | VC. Max.           | L3                     |
| 3    | Loop                      | AM                  | 1700 Kc                    | VC. Min.           | TC4                    |
| 4    | Repeat step 2 & 3         |                     |                            |                    |                        |
| 5    | Loop                      | AM                  | 600 Kc                     | 600 Kc             | L <sub>2</sub>         |
| 6    | Loop                      | AM                  | 1400 Kc                    | 1400 Kc            | TC1                    |
| 7    | Repeat step 5 & 6         |                     |                            |                    |                        |

ALIGNMENT INSTRUCTIONS (SW)

- \* Volume control should be at maximum.
- \* Output meter should be connected across the voice coil of speaker

| Step | Signal Generator Coupling | Band Switch Setting | Signal Generator Frequency | Radio Dial Setting | Adjust for Max. Output |
|------|---------------------------|---------------------|----------------------------|--------------------|------------------------|
| 1    | Loop                      | SW                  | 3.55 Mc                    | VC. Max.           | L4                     |
| 2    | Loop                      | SW                  | 10.5 Mc                    | VC. Min.           | TC3                    |
| 3    | Repeat step 1 & 2         |                     |                            |                    |                        |
| 4    | Loop                      | SW                  | 4.0 Mc                     | 4.0 Mc             | L1                     |
| 5    | Loop                      | SW                  | 8.0 Mc                     | 8.0 Mc             | TC2                    |
| 6    | Repeat step 4 & 5         |                     |                            |                    |                        |

ALIGNMENT INSTRUCTIONS (LW)

- \* Volume control should be at maximum.
- \* Output meter should be connected across the voice coil of speaker.

| Step | Signal Generator Coupling | Band Switch Setting | Signal Generator Frequency | Radio Dial Setting | Adjust for Max. Output |
|------|---------------------------|---------------------|----------------------------|--------------------|------------------------|
| 1    | Loop                      | LW                  | 145 Kc                     | VC. Max.           | L4                     |
| 2    | Loop                      | LW                  | 370 Kc                     | VC. Min.           | TC3                    |
| 3    | Repeat step 1 & 2         |                     |                            |                    |                        |
| 4    | Loop                      | LW                  | 145 Kc                     | VC. Max.           | L1                     |
| 5    | Loop                      | LW                  | 370 Kc                     | VC. Min.           | TC2                    |
| 6    | Repeat step 4 & 5         |                     |                            |                    |                        |

PARTS LIST

FM/AM/SW RADIO

FM/AM/LW RADIO

VARIABLE CAPACITOR

| Symbol No.   | Parts No. | Description      |
|--------------|-----------|------------------|
| VC1          | R-33306   | Tuning Capacitor |
| TF           | R-29307   | Trimmer          |
| TC1, 2, 3, 4 | R-33307   | Trimmer          |

VOLUME CONTROL

| Symbol No. | Parts No. | Description           |
|------------|-----------|-----------------------|
| VOL.       | R-20303   | Volume control (Tone) |

SPEAKER

| Symbol No. | Parts No. | Description |       |           |
|------------|-----------|-------------|-------|-----------|
| SP.        | R-26304   | Size        | Field | V.C. IMP. |
|            |           | 2½"         | P.D.  | 8Ω        |

ROD ANTENNA

| Symbol No. | Parts No. | Description |
|------------|-----------|-------------|
| Rod Ant    | R-6007    | Rod Antenna |

TRANSFORMER

| Symbol No. | Parts No. | Description           |
|------------|-----------|-----------------------|
| AA         | R-3315    | AM IFT                |
| AB         | R-3316    | AM IFT                |
| AC         | R-29314   | AM IFT                |
| FA         | R-29311   | FM IFT                |
| FB         | R-29312   | FM IFT                |
| FC         | R-3340    | FM IFT                |
| FD         | R-29313   | } FM Ratio Trans.     |
| FE         | R-29313   |                       |
| T1         | R-29306   | I. P. T.              |
| T2         | R-29305   | O. P. T.              |
| PT         | R-30304   | Power Trans. FM-AM-SW |
| PT         | R-30604   | Power Trans. FM-AM-LW |

HOUSING ASSEMBLY

| Symbol No.  | Parts No. | Description |
|-------------|-----------|-------------|
| Housing     | R-33002   |             |
| Tun Kob     | R-20005   |             |
| Tone Knob   | R-20006   |             |
| VR Knob     | R-20007   |             |
| Pointer     | R-20111   |             |
| Front Panel | R-33001   |             |
| SW Lever    | R-33004   |             |

CHASSIS ASSEMBLY

| Symbol No. | Parts No. | Description  |
|------------|-----------|--------------|
| Chassis    | R-33101-A | Chassis Assy |
| Tuner case | R-29111   | Tuner Case   |
|            | R-29112   | Tuner Cover  |

COIL

| Symbol No. | Parts No. | Description              |
|------------|-----------|--------------------------|
| L3         | R-9304    | AM OSC. Coil             |
| L5, L7     | R-6315    | FM ANT. Coil & OSC. Coil |
| L6         | R-3342    | FM CH. Coil              |

TRANSISTOR & DIODE

| Symbol No. | Original Type    | Description    |
|------------|------------------|----------------|
| Tr1        | 2SA240           | FM RF. Amp.    |
| Tr2        | 2SA239           | FM Mix.        |
| Tr3        | 2SA239           | FM OSC.        |
| Tr4        | 2SB54            | FM AFC.        |
| Tr5        | 2SA93            | FM IF/AM Mix.  |
| Tr6        | 2SA93            | AM OSC.        |
| Tr7, 8     | 2SA93            | FM AM IF Amp.  |
| Tr9        | 2SB54            | Audio Pri Amp. |
| Tr10       | 2SB54            | Driver Amp.    |
| Tr11,12    | 2SB56            | Power Amp.     |
| D1         | IN60             | AM AGC.        |
| D2, 3      | IN60             | FM Detector    |
| D4         | IN60             | AM Detector    |
| D5         | IN60             | OSC Stable     |
| SD         | SE-O5 (or 1S358) | AC Rectifier   |

SWITCH

| Symbol No. | Parts No. | Description |
|------------|-----------|-------------|
| SW         | R-33302   | Band Switch |

FM/AM/SW RADIO

COIL

| Symbol No. | Parts No. | Description     |
|------------|-----------|-----------------|
| L1, 2      | R-33303   | AM SW Ant. Coil |
| L4         | R-33309   | SW OSC. Coil    |

HOUSING ASSEMBLY

| Symbol No. | Parts No. | Description          |
|------------|-----------|----------------------|
| Dial scale | R-33003   | Dial Scale (for SW)  |
| Indicator  | R-33006   | Band Switch (for SW) |

FM/AM/LW RADIO

COIL

| Simbol No. | Parts No. | Description     |
|------------|-----------|-----------------|
| L1, 2      | R-33353   | AM LW Ant. coil |
| L4         | R-33359   | LW OSC. coil    |

HOUSING ASSEMBLY

| Symbol No. | Parts No. | Description       |
|------------|-----------|-------------------|
| Dial scale | R-33053   | Dial Scale        |
| Indicator  | R-33056   | Band Switch Plate |